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U.S. Serial No. 10/668,255
CS-21,256

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REMARKS

Re-examination and reconsideration of the subject matter identified in caption, pursuant and consistent with 37 C.F.R. § 1.111 and in light of the remarks which follow are respectfully requested.

As correctly noted in the Office Action Summary, claims 1-20 are currently pending in the application and are under consideration.

Turning to the Official Action, claims 1, 2, 13 and 18 stand rejected on the ground of non-statutory obviousness-type double patenting as allegedly being unpatentable provisionally over claims 1-4 in application U.S. Serial No. 10/852,117 and separately over claims 2, 3, 5, 6, 8 and 9 in U.S. Patent No. 6,708,870. These rejections are traversed for the following reasons.

The invention claimed in the applied documents all require the formation of a cooling channel in the backing plate through which a cooling fluid is passed so as to cool the sputter target assembly during use. In addition, the solid state bond metal layer is applied between the backing plate and target in such a manner that the layer does not protrude into the channel and block the cooling channels. By comparison, in the present invention ridges are provided on the bonding surface of the backing plate where the solder is allowed to flow and solidify so as to form a uniform thickness interface. Thus, the method and the final product is quite different from those of the applied documents, as the cooling channels cannot be utilized to gage solder bond thickness. Accordingly, withdrawal of these rejections is in order and respectfully requested.

Claims 1-11 and 18 stand rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Ogata et al (Japanese Patent Document No. 02043362 A). This rejection is traversed for the following reasons.

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The present invention relates to a method of bonding a sputter target to a backing plate, and more specifically, the use of a backing plate having spaced-apart ridges on the bonding surface of the backing plate.

In accordance with one aspect of the invention, and as set forth in independent claim 1, a method for forming a solder bonded sputter target/backing plate assembly is provided. The method includes (a) forming a backing plate with a bonding surface having a plurality of spaced-apart ridges that are disposed on and within the periphery of the bonding surface of the backing plate; (b) forming a sputter target having a sputtering surface and substantially flat bonding surface; (c) applying a solder material to the interface spaces defined by superimposing the sputter target within the periphery of and onto the plurality of ridges on the backing plate; and (d) allowing the solder material to solidify and bond the sputter target to the backing plate so that the plurality of ridges provide an effective uniform thickness solder bonded interface.

Ogato et al pertains to a method of joining a sputter target and a backing plate by a brazing material. Ogato et al, however, does not disclose each and every feature of the claimed invention. For example, Ogato et al does not disclose forming a backing plate with a bonding surface having a plurality of spaced-apart ridges that are disposed on and within the periphery of the bonding surface of the backing plate as set forth in independent claims 1 and 18. In this regard, the ridges in the present invention act as spacers to ensure a substantially uniform solder thickness. By comparison, Ogato et al simply provides a grooves or slots in the bonding surface of the backing plate where the brazing material is introduced presumably in order to reduce warpage and deformation of the target assembly. See translated Abstract.

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Clearly, Ogata et al does not disclose raised protrusions in the form of space-apart ridges on the bonding surface of the backing plate to accommodate the solder and provide a uniform thickness interface. Accordingly, withdrawal of this rejection is in order and it is respectfully requested.

Claims 1-3, 12, 13, 18 and 19 stand rejected under 35 U.S.C. §102(e) as allegedly being anticipated by Koenigsmann et al (U.S. Patent No. 6,708,870 B2). This rejection is traversed.

Koenigsmann et al relates to the field of sputtering targets. In particular, Koenigsmann et al relates to methods for attaching backing plates to sputter targets. See col. 1, Ins. 5-10.

Koenigsmann et al, like Kim above, does not disclose each and every feature of the present invention. In this regard, Koenigsmann et al discloses the formation of a cooling channel in the backing plate through which a cooling fluid is passed so as to cool the sputter target assembly during use. In addition, the solid state bond metal layer is applied between the bonding surface of the backing plate and the target in such a manner that the layer does not protrude into the channel and block the cooling channels. Thus, clearly Koenigsmann et al does not disclose the spaced-apart ridges disposed on the surface of the backing plate, where the solder is allowed to flow and solidify to form a uniform thickness interface. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 12-17, 19 and 20 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Ogata et al in view of Ivanov (U.S. Patent Application Publication No. 2005/0284746). This rejection is traversed for the following reasons.

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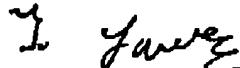
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Ogata et al has been discussed in detail above. Ivanov relates to a sputter target/backing plate joining technique and assemblies made thereby. See paragraph 3. Ivanov has been relied on for the disclosure of a solder comprising Sn-Ag-Cu to form a bond between the backing plate and the sputter target. Official Action at page 6. However, Ivanov does not cure the above-discussed deficiencies in Ogata et al. Specifically, Ogata et al does not disclose or suggest forming a backing plate with a bonding surface having a plurality of spaced-apart ridges that are disposed on and within the periphery of the bonding surface of the backing plate. Thus, for the foregoing reason withdrawal of this rejection is in order.

Entry of the foregoing, and prompt favorable action of the subject application on the merits are respectfully requested.

If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned at his/her earliest convenience.

Respectfully submitted,



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